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Eric D. Ramstetter
Asian Growth Research Institute and Kyushu University, Japan
and
Kien Trung Nguyen
The University of Danang, School of Economics, Vietnam

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Eric D. Ramstetter*, Asian Growth Research Institute and Kyushu University
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Kien Trung Nguyen, The University of Danang, School of Economics

Abstract

This paper examines patterns and changes of shares of the state sector, including state-owned enterprises (SOEs) and other state entities, and foreign multinational enterprises (MNEs) in Vietnam since the mid-1990s. Because most Vietnamese are still self-employed or household workers with little or no connection to the state sector or MNEs, it is important to exclude the household sector from these comparisons. First, ownership shares vary markedly among economic activities. For example, economy-wide estimates indicate that MNEs and state sector have both been relatively small employers, but larger producers. MNEs have also become by far the largest exporters. Second, ownership shares and their trends vary substantially depending on the data source. Most conspicuously, SOE shares of non-household enterprise employment and sales have decreased rapidly since 2000. On the other hand, economy-wide estimates of state shares in non-household employment and GDP declined much more slowly. Recent discrepancies between these estimates have become so large that they almost certainly result from errors in one or more data sources. There are also smaller discrepancies between corresponding, alternative estimates of MNE shares. The extent of privatization of SOEs and its economic effects are thus ambiguous in Vietnam, creating important concerns for academics and policy makers.

JEL Classification Codes: F14, F23, L33, L60, L81, O53

Keywords: Multinational enterprises, state-owned enterprises, ownership, employment, production, exports

*Corresponding author, ramstetter@gmail.com

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1. Introduction

Many previous studies, policy documents, and compilations of official statistics have documented the rapid growth of foreign multinational enterprises (MNEs) in Vietnam after the substantial reforms (*Doi Moi*) that began in 1986 and stabilization of the economy in the mid-1990s. These sources often primarily rely on two distinct data sources, economy-wide estimates of GDP (from national accounts), employment (from labor force surveys), and exports or imports (from customs' trade data), on the one hand, and estimates of firm turnover, employment, and other activities (including trade in recent years) collected by enterprise surveys, on the other.

These data consistently suggest that ownership shares vary among economic activities in Vietnam. For example, both economy-wide and firm data indicate that MNE export shares have been conspicuously large, while corresponding shares of non-household GDP or firm sales have been smaller; in other words, MNEs have had relatively high export propensities (export-production ratios). Similarly, the state sector, including state-owned enterprises (SOEs) and other state entities, has accounted for larger shares of non-household production than employment, and SOEs have had higher shares of firm sales than employment; in other words, average labor productivity has been relatively high in SOEs compared to the average. However, economy-wide and firm data also differ in important respects. For example, the firm data suggest that SOE shares of firm turnover and employment fell rapidly in 2000-2014, but corresponding state shares of non-household GDP or employment declined slowly. MNE shares of firm sales also rose more slowly than corresponding shares of non-household GDP.

After a brief literature review which illustrates the economic importance of analyzing ownership-related issues (Section 2), this paper first carefully compares alternative estimates of state or SOE shares and MNE of non-household production and employment from economy-wide and enterprise data (Section 3). Because predominantly rural households and

self-employed workers continue to account for about one-third of GDP and over three-fourths of employment in Vietnam, the household sector is carefully excluded.[1] Section 4 then reviews economy-wide evidence on MNE shares of exports for 1995-2015 and presents new compilations of firm export data for 2011-2012. Both sources indicate that MNEs account for relatively large export shares of and have high export propensities. The firm also data indicate that wholly-foreign MNE (WFs), which now account for the vast majority of MNE activity, make particularly large contributions to exports. However, the analysis reveals several important problems in firm export data for these and other years, and the analysis focuses on identifying potential causes and how they might be addressed in subsequent research. Finally, we highlight the important policy implications emerging from the literature and the empirical analyses (Section 5), before concluding (Section 6).

2. Literature Review

Theory and empirical evidence suggest MNEs are likely to possess relatively large amounts of generally knowledge-based, intangible, firm-specific assets related to production technology, marketing, and entrepreneurship. Those assets should make MNEs more productive than non-MNEs (Buckley and Casson 1992; Casson 1987; Caves 2007; Dunning 1993; Rugman 1980, 1985). This is reflected by larger firm size, higher factor productivity and factor returns, and/or higher capital or technology intensity in MNEs.

Previous evidence from large, heterogeneous samples of Vietnam's manufacturing firms in many industries is broadly consistent with the hypothesis that MNEs had relatively high total factor productivity (TFP) after accounting for factor intensities and scale, among other firm- and industry-level characteristics (Athukorala and Tien 2012; Ramstetter and Phan 2013).

[1] The large household sector reflects Vietnam's status as a relatively low-income developing economy (per capita GDP of US$2,052 in 2013; General Statistics Office various years b). The household share of exports is not known but is probably close to zero.

However, when more homogenous samples of firms were analyzed in manufacturing groups, MNE-private and SOE-private differentials were often insignificant or inconsistent.

Similar evidence is common for large heterogeneous samples of Chinese manufacturing firms (Wang and Wang 2015) and manufacturing plants in Indonesia (Takii 2004), for example. On the other hand, evidence for manufacturing plants in Malaysia and Thailand (Haji Ahmad, 2010; Menon, 1998; Oguchi et al. 2002; Ramstetter 2004) indicates that MNE-local differentials in productivity levels or growth were often small and/or insignificant, even in large heterogeneous samples. Industry-level results from Indonesia, Malaysia, and Thailand also suggest that insignificant productivity differentials were common.

Related research on wages paid by manufacturing firms in Vietnam (Nguyen 2015; Nguyen and Ramstetter 2015a, 2015b), as well as manufacturing plants in Indonesia (Lipsey and Sjöholm 2004; Ramstetter and Narjoko 2013) and Malaysia (Ramstetter 2014), provide stronger evidence that MNEs tend to pay relatively high wages, even at the industry level and after the educational background of workers, worker occupation, and other firm- or plant-level characteristics are controlled for. MNE-local or MNE-private wage differentials were also relatively large for high-wage, white-collar (non-production) workers in Indonesia and Vietnam. Hale and Long (2011) found a similar pattern for a small sample of Chinese firms, but that foreign ownership had no effect on wages of relatively low-wage, ordinary workers.

In contrast to MNEs, economists since Adam Smith have long assumed that SOEs tend to be more inefficient than private firms because SOE managers have relatively weak incentives to minimize costs or maximize revenues. If this inefficiency leads to low labor productivity, for example, then SOEs are likely to pay relatively low wages. However, previous empirical evidence suggests that SOEs often pay relatively high wages and have relatively high productivity in Vietnam (Ramstetter and Phan 2013; Nguyen 2015; Nguyen and Ramstetter 2015a, 2015b) and elsewhere (Brown et al., 2004, 2005; Djankov and Murrell 2002;

Megginson, and Netter 2001). Governments often choose to establish SOEs in relatively high-productivity, high-wage industries such as steel. This is an important reason SOEs may have relatively high productivity or wages in samples covering several heterogeneous industries. However, even within the steel industry, for example, firm-level evidence suggests that SOEs or former SOEs were among the most efficient and profitable producers in China, Korea and Taiwan in the 1990s (Ramstetter and Movshuk 2005).

MNEs may also tend to export more than non-MNEs because exporting firms are more productive than non-exporters and MNEs have relatively high productivity. However, it is very difficult to sort out the direction of causality. Does high productivity lead to exporting, or does exporting force firms to become more productive, or does causality run both directions (Bernard and Jensen 2004, Melitz 2003)? Perhaps more importantly, MNEs make large investments in international marketing networks and have extensive experience with international trade. Accumulation of related, generally intangible assets is another key reason that firms become able to export relatively cheaply (Roberts and Tybout 1997). Thus, even if ownership-related productivity differentials are not pervasive, MNEs may have higher export propensities than non-MNEs. This is an important story told by previous studies suggesting that MNE-local differentials in export-sales ratios often remain highly significant statistically after accounting for plant-level characteristics such as factor intensity, scale, and vintage in Indonesia (Ramstetter 1999; Ramstetter and Takii 2006; Sjöholm and Takii 2006) and Thailand (Ramstetter 1994; Ramstetter and Umemoto 2006).

Another important story relates to evidence that export propensities tend to be highest among wholly-foreign MNEs or MNEs with very large foreign ownership shares of 90 percent or more, and that these ownership-related differences often remain statistically significant after accounting for related firm- or plant-level characteristics in Vietnam,

Indonesia, and Thailand.[2] Similarly, Moran (2001) argues that MNE affiliates which are well integrated into the parent's network are likely to contribute more to host economies than affiliates which are isolated from the parent-controlled network by ownership restrictions or local content requirements.

The evidence also suggests that the extent of foreign ownership is strongly related to exporting but not to productivity.[3] This in turn suggests that MNE parents restrict access of their minority-owned affiliates to exporting networks more than access to technology-related assets. This may result because MNEs in Vietnam and other developing economies often use relatively simple technologies in labor-intensive assembly. Correspondingly, the risk of leaking sophisticated technologies through minority-owned affiliates is often relatively small. On the other hand, the risks of minority-owned affiliates oversupplying export markets are often larger and MNEs sometimes forbid local partners in minority-foreign affiliates from exporting the MNE's products.

Particularly in the 1980s and 1990s, several developing economies in Southeast Asia and elsewhere relaxed ownership restrictions and local content requirements for MNEs exporting large portions of output. Thus, strong correlations between foreign ownership shares and export propensities may result from policy biases, as well as MNE strategies. Vietnam is an interesting case because there have been few formal foreign ownership restrictions after the promulgation of the first foreign investment law in 1988, soon after *Doi Moi*. Nonetheless, implementation and formal policy sometimes diverged, with government officials effectively limiting foreign ownership shares in some cases, especially before the promulgation of the Enterprise Law in 2000. This bias weakened after the Law's subsequent implementation (Van

[2] See Phan and Ramstetter (2009) on Vietnam, Ramstetter (1999) and Ramstetter and Takii (2006) on Indonesia, and Ramstetter (1994) and Ramstetter and Umemoto (2006) on Thailand.

[3] Moran's argument also suggests that productivity should be higher in MNEs with relatively large foreign ownership shares, but the evidence is often inconsistent with this latter hypothesis in Indonesia (Takii 2004), Thailand (Ramstetter 2004), or Vietnam (Ramstetter and Phan 2013), for example.

Arkadie and Mallon 2003), reforms related to the implementation of the Bilateral Trade Agreement between Vietnam and the United States in 2001, the implementation of the ASEAN Free Trade Agreement in 2005, and further reforms related to Vietnam's WTO accession in early 2007. Thus, if WFs still tend to export relatively large portions of output in Vietnam, the main cause is probably MNE strategy, not policy bias.

3. Estimates of Production and Employment by Owner

This section compares economy-wide estimates of non-household production (GDP from the national accounts) and employment (from labor force survey publications and revised series on the web) and corresponding estimates from the enterprise surveys (published compilations, supplemented with unpublished compilations from underlying firm-level data). It emphasizes how recent, substantial declines of SOE shares of firm activity during 2000-2014, contrast with much smaller declines in state shares of corresponding, economy-wide estimates. Definitional and methodological differences are potentially important and the section analyzes how they might contribute to discrepancies. As emphasized in the introduction, households and the self-employed are carefully excluded from the comparisons.

3.1. Production Estimates

In 2000, state shares of non-household GDP and SOE shares of firm sales (from published compilations) were similar (57 vs. 55 percent) and MNE shares of both measures were identical (20 percent, Table 1). MNE shares of both measures remained similar at 19-22 percent through 2005. However, as early as 2004, the SOE share of firm sales was 10 percentage points lower than the state share of non-household GDP (46 vs. 56 percent), and this discrepancy widened to 20 percentage points or more from 2007. By 2014, the SOE share of firm sales was only 22 percent, but the corresponding state share of non-household GDP

remained close to one-half. MNE shares of non-household GDP also increased more rapidly than shares of firm sales. Discrepancies between these shares reached 7-9 percentage points in 2008-2011, before falling back to 5 percentage points in 2013-2014, when MNEs accounted for about one-fourth of firm sales and 30-31 percent of non-household GDP.

Because state/SOE and MNE shares of non-household GDP and firm sales were similar in 2000, private shares were also similar at 23 and 25 percent, respectively (Table 1). However, the private share of non-household GDP subsequently declined from 22-24 percent in 1998-2009 to 20-21 percent in 2010-2015 (Table 1).[4] In marked contrast, private shares of firm sales almost doubled in 2000-2007, from 25 to 47 percent, before stabilizing at about one-half in 2008-2014. What is responsible for these discrepancies and their explosive growth?

Perhaps most importantly, the extent to which state shares of non-household GDP include non-SOE activities of the government and other state organizations is ambiguous. The substantial widening of discrepancies between state shares of non-household GDP and SOE shares of firm sales suggests that direct production by non-SOE state entities grew rapidly after the mid-2000s. However, the inability to identify precisely which non-SOE state entities have become so large creates suspicion that estimation error may also be involved.

There are several potentially important sources of measurement error. Because it is important to publish GDP estimates in a timely fashion, GDP must be estimated rapidly, often on the basis of relatively incomplete information. This is why preliminary and revised GDP estimates often differ greatly. Vietnam contrasts with many economies because GDP estimates are published relatively rapidly and differences between preliminary and revised estimates are usually relatively small. This creates the impression that Vietnam's GDP estimates may rely on relatively incomplete information and embody large errors as a result.

Although processing detailed firm surveys requires more time than estimating GDP,

[4] Part of this decline may also be related to the exclusion of "products taxes less subsidies on production" from ownership-based estimates of GDP from 2010 forward.

Vietnam's enterprise data are available relatively quickly and coverage is relatively comprehensive.[5] Compilations of firm sales (or employment) are also straightforward. If firms report data accurately, sums can be compiled directly from survey questionnaires. Alternatively, if firms tend to underreport sales because they fear accurate reporting could result in tax difficulties, for example, sums can be adjusted to reflect the probable extent of underreporting. Here it is important that underreporting by MNE and SOEs is likely to be relatively small because these firms are often prominent and underreporting easy to discover. On the other hand, the reverse may be true for most private firms, which tend to be relatively small. Correspondingly, SOE and MNE shares of firm sales may be overestimated in the firm data, even though comparisons to GDP data suggest the opposite pattern for recent years.

Previous studies (Ramstetter and Phan 2013; Ramstetter and Nguyen 2016) have also highlighted potentially important problems encountered when compiling unpublished, firm-level data from enterprise surveys. For example, especially in earlier years, the firm-level data included several records with duplicate ID tags and duplicate or near duplicate records. Numerous firms also reported obviously unrealistic or economically meaningless data. Compilations from the firm-level data often differ from published compilations because they omit firms reporting unrealistic or meaningless data.[6] Another, rarely discussed problem is how firm IDs are defined when takeovers occur (after takeover, the larger firm's ID is retained, but the smaller firm's ID is deleted). As a result, it is very difficult, if not impossible,

[5] Enterprise surveys cover all non-household firms with over 10 employees in all industries, but exclude household firms and organizations other than firms, and collect limited information from firms with 10 or fewer employees (Jammal et al, 2006).

[6] For example, a number of firms report non-positive turnover or employment. Our compilations excluding these firms for 2000-2014 suggest an average of 2.3 percent lower firm sales than the published compilations used in Table 1. However, there were large fluctuations in these differentials, with our compilations yielding 8 to 11 percent lower sums in 2006-2008 and 2014, and 4 percent larger sums in 2001 and 2013. Unrealistic fluctuations in key variables also appear to be obvious input errors in some cases. For example, some firms may report sales growth rates of 10 percent in year 1, 1000 percent in year 2, and 20 percent in year 3, but employment growth rates of 12 percent, 15 percent and 17 percent, respectively. Most firms reporting unrealistic or unusual data are small, partially because it is easier to identify and correct obvious mistakes in data for relatively prominent, large firms.

to identify takeovers in the firm-level data. However, despite these problems, our substantial experience using the firm data leads us to believe they generally provide a relatively reliable and comprehensive picture of aggregate firm performance.

It is also potentially important that firm sales include intermediate expenditures on parts, materials, energy and utilities, and some services, which GDP or value added excludes. For example, MNEs often have relatively low ratios of value added to sales, especially in key processing industries like electronics, footwear, and apparel. Thus, MNE shares of sales might exceed corresponding shares of value added.[7] On the other hand, ratios of intermediate expenditures to sales are not likely to change dramatically over time. Thus, this definitional difference probably cannot explain the widening of discrepancies between alternative estimates of SOE and MNE shares observed in Table 1.

Differences in ownership classifications are also potentially important. Notably, the national accounts data do not clarify how they classify joint ventures (JVs) involving SOEs and MNEs. Published compilations of the enterprise data classify all MNE JVs as MNEs and a small group of private joint stock companies "having capital of state" as private. Survey questionnaires define the latter group as joint stock companies "having state capital ≤ 50%" and ask for the share of state capital, but several firms explicitly report zero state shares.[8] Questionnaires also ask the state share in private limited companies, but published

[7] One would like calculate firm value added directly, but enterprise surveys do not collect necessary, firm-level information on intermediate costs. The General Statistics Office has approximate estimates of value added for major products of firms, but they use industry-level input-output coefficients. Correspondingly, estimates for several firms yield negative value added or apparently unrealistic value-added per worker levels (Ramstetter and Phan 2013).

[8] For example, after samples were limited to firms with positive employment and turnover, the 2014 data contained 1,472 firms with 397,077 workers in this category (96 and 98 percent of published estimates [General Statistics Office 2016], respectively), of which 117 firms with 18,709 workers reported 0 shares and 1 firm with 213 workers did not report the state share.

compilations do not clarify that a few firms in this large group have state capital.[9] In order to investigate whether reclassifying these SOE JVs as SOEs might explain the widening discrepancies between state shares of non-household GDP and SOE shares of firm sales, shares of all SOE-private JVs (defined as all private joint stock and private limited companies with positive state shares) and MNE-SOE JVs (which are classified separately) were calculated from unpublished, firm-level data.[10]

In 2000-2006, MNE-SOE JVs were relatively large, accounting for 10-12 percent of sales by firms with positive sales and employment, but this share fell to as low as 2-4 percent in 2012-2014 (Table 1). In other words, the vast majority of sales by MNE JVs were from JVs with SOEs. However, because their shares declined to low levels, reclassifying MNE-SOE JVs as SOEs cannot explain the increasingly large discrepancies between SOE shares of firm sales and state shares of non-household GDP. Similarly, after rising from 5 to 7 percent in 2005-2008, shares of SOE-private JVs also fell to 4-5 percent in 2012-2014. Thus reclassifying SOE-private JVs also cannot explain the widening discrepancies either.

3.2. Employment Estimates and Comparisons of Production and Employment Shares

Comparisons of non-household employment estimates from the Labor Force Surveys (LFS, including updated series available on the web) and enterprise data also suggest that state shares (56 percent in 2007, 44-47 percent in 2009-2014, and 39 percent in 2015) were much larger than corresponding SOE shares of enterprise employment (21-24 percent in 2007-2009

[9] 2014 data contained 210,234 firms with 3,586,497 workers in this category (82 and 95 percent of published estimates [General Statistics Office 2016], respectively), of which 893 firms with 26,588 workers reported positive state shares.

[10] Both of these estimates probably overestimate the extent of state control because state shares are very small (9 percent or less) in several SOE-private JVs (e.g., 744 of 893 limited companies and 124 of 1,354 joint stock companies), and MNEs dominate in many MNE-SOE JVs.

and 18-22 percent in 2010-2014, Table 2).[11] Here again, this presumably results primarily because the LFS estimates of state employment (4.8-5.5 million in 2007 and 2009-2014) include numerous state workers that didn't work for SOEs (2.1-2.2 million workers, according the enterprise surveys). However, LFS estimates of total non-household employment were remarkably similar to enterprise employment (11.2-12.3 versus 10.9-12.1 million in 2011-2014). It is also difficult to understand why discrepancies between the two state/SOE share estimates were smaller in 2009-2010 (26-28 percentage points) than other years (32 percentage points) because this suggests that non-SOE state entities counterintuitively reduced employment just after the World Financial Crisis.

In 2010-2014, economy-wide (LFS) estimates of MNE employment shares (15-17 percent) were substantially smaller than corresponding enterprise estimates (22-28 percent), which contrasts with patterns observed for MNE production, Table 2).[12] These discrepancies also increased during this period. On the other hand, both economy-wide (GDP and LFS) estimates suggest much smaller private shares than the firm data. Private shares were 59-61 percent of firm employment, but only 38-39 percent of non-household employment.

The most reasonable conclusion one can make from careful examination of Tables 1 and 2 is that there are often large discrepancies between economy-wide (GDP and LFS) estimates of state and MNE shares and corresponding estimates of SOE and MNE shares of firm activity, and these discrepancies have grown in recent years. The largest source of these discrepancies is probably that many state workers are not employed by SOEs. However, the precise magnitudes and institutions involved in non-SOE state activity are unclear. Moreover, there are discrepancies in trends of SOE and MNE production shares that are difficult to explain,

[11] Alternative, presumably revised, time series estimates of state and MNE employment are also available on the web from General Statistics Office (various years b) and usually indicate somewhat higher employment in these groups than the original LFS publications (Table 2). However, discrepancies among these two sources are relatively small, except for MNEs in 2007.

[12] The analysis of MNE employment focuses on the post 2010 period because published estimates in the LFS were smaller than revised estimates on the web for 2007 and 2009.

except perhaps by measurement error.

It is also important that ownership shares of production and employment differed substantially and relatively consistently. For example, state shares of non-household GDP and SOE shares of firm sales exceeded corresponding shares of non-household and firm employment in all years. Thus, average labor productivity (non-household GDP or firm sales per employee, Table 3) was consistently lower in private firms than in SOEs, for example. The scope of these differentials was also similar (52-54 percent lower for non-household GDP per worker and 44-54 percent lower for sales per employee) in 2010-2014.[13] These differentials partially reflect the large size of SOEs and their concentration in capital-intensive industries, while most private firms are relatively small and more labor-intensive.

Economy-wide estimates also suggest that MNEs consistently had the highest GDP per worker (113-319 percent higher than SOEs in 2000-2004 and 48-80 percent higher thereafter, Table 3). However, patterns of enterprise sales per worker differed. SOEs had higher labor productivity by this measure than all MNEs or private firms in 2005-2014, but MNEs had the highest in 2000-2004. MNEs also had lower sales per worker than private firms in 2008-2011.

The firm data also indicate stark differences between MNE-JVs, particularly MNE-SOE JVs, and WFs. WFs had lower sales per worker than SOEs in all years and lower productivity than private firms in most (2002-2014, Table 3). Relatively low labor productivity in WFs, reflects their importance in generally labor-intensive assembly of major exports such as electronics, footwear, and apparel. On the other hand, MNE-SOE JVs, which are classified as MNEs in published compilations, had the highest sales per worker of all ownership groups. In other words, MNE-SOE JVs accounted for substantially larger shares of firm sales than employment (3-12 vs. 1-3 percent Tables 1-2).

[13] Estimates for the non-household private sector are only calculated for 2010-2015 because estimates for 2007 and 2009 appear less reliable than for other years and data for other years are not available. Revised "web" estimates of employment are used for SOEs and MNEs (see Table 2).

4. Exports by Owner

Economy-wide estimates from commodity trade data show that both MNE export values and the MNE shares of Vietnam's exports rose rapidly over the last two decades. MNE shares increased particularly rapidly from 27 percent in 1995 to 45-47 percent in 2001-2002 and then 55 percent in 2004 (Table 4).[14] Reflecting the effects of the 2008-2009 World Financial Crisis, MNE shares fell from 57-58 percent in 2005-2007 to 53-55 percent in 2008-2010. In 2009, export values also shrunk by 12 percent for MNEs, but only 5.1 percent for non-MNEs. After the crisis, rapid increases resumed with MNE shares rising to 63-67 percent in 2012-2014 and 71 percent in 2015. In short, MNE export shares were conspicuously large and grew rapidly.

A similar series compiled from monthly trade data reports shows that oil accounted for 30-40 percent of MNE exports in 2005-2008, but under 10 percent since 2013 and only 2 percent in 2015 (Table 4). Correspondingly, MNE shares of non-oil exports were substantially lower than shares of all exports in 2005-2006 (45-46 percent vs. 57-58 percent). This difference became much smaller in recent years, even in years when oil prices and oil export values were still relatively high (e.g., 60 vs. 63 percent in 2012, 65-66 vs. 67 percent in 2013 and 2014). The vast majority of non-oil exports are manufactures, which grew particularly rapidly.

Because MNE shares of exports were much larger than corresponding shares of production, export propensities were much larger in MNEs than in non-MNEs (Table 4). For example, after 1995, export-GDP ratios have always been larger than 1 in MNEs, increasing to slightly over 2 in 2004-2007 and over 3 in 2014-2015. Although these ratios increased in most years, there was a particularly steep decline in 2009, following a more modest decline the year previous, again reflecting the strong effects of the World Financial Crisis on MNE exports. Differentials between MNEs and non-MNEs were relatively stable in 1995-2002 when

[14] It is not possible to exclude the household sector from export share estimates, but households and the self-employed probably accounted for very few exports.

export-GDP ratios were 4.7-5.8 times larger in MNEs. The differentials increased markedly thereafter (to over 7 times larger in 2005-2006 and 2011-2012 and over 9 times in 2013-2015), but were relatively small during the 2008-2009 crisis years (5.4-5.8 times larger).

Export-GDP ratios are less accurate measures of export propensities than export-sales or export-output ratios, for example, because they mix a measure including intermediate costs (exports) and another measure excluding them (GDP or value added).[15] As mentioned above, processing MNEs probably have higher ratios of intermediate cost to sales or output in industries like electronics, apparel, and footwear. Thus, export propensity differentials between MNEs and non-MNEs may be smaller than depicted in Table 4 if measured more precisely as export-sales or export-output ratios. Nonetheless, trends in all of these export-production ratios are usually highly correlated. Thus, Table 4 provides strong evidence that MNEs have substantially higher export propensities than non-MNEs in Vietnam.

Correspondingly, manufactured exports have accounted for most of the growth in Vietnam's exports in recent years. Using a broad definition of manufacturing exports designed to be consistent with the Vietnam Standard Industrial Classification (VSIC), manufacturing exports increased from under $9 billion in 2000 to over $58 billion in 2010, and manufacturing's share of total exports increased from 61 to 81 percent (Table 5).[16] Using a common but narrower definition of manufacturing exports which excludes many food- and resource-intensive exports by manufacturing firms (the sum of Sections 5 to 8 of the Standard International Trade Classification [SITC]), the increase was even more rapid, from 43 to 65 percent. This share continued to increase rapidly to 76 percent in 2014. Typical labor-intensive manufactures (e.g., food, textiles, apparel, footwear, furniture, and miscellaneous manufactures) were among the most important exports through 2010. However, by 2014,

[15] Export-GDP ratios often exceed 1 in small, open economies like Vietnam for this reason.

[16] The VSIC is similar to the International Standard Industrial Classification (ISIC), but more detailed in some categories. The older, 1993 version (VSIC93) is similar to ISIC revision 3 while the newer, 2007 version (VSIC07) is similar to ISIC revision 4.

electric and electronic machinery became by far the largest category.

Recent enterprise surveys for 2010-2014 have included questions about the value of firm-level exports, which allow more precise and detailed examination of ownership-related differences in export propensities than previously possible. The compilations in Tables 6-8 is one of the first attempts to examine these data carefully, but they probably raise more questions than they answer. For example, obvious, large errors result if one sums reported firm exports for 2010 and 2013-2014. In 2013, exports reported by medium-large firms with 20 or more employees sum to $989 billion or almost 7.5 times the $132 billion in total merchandise exports reported in commodity trade data (Tables 4-5). Sums of firm exports for 2010 ($149 billion) and 2014 ($348 billion) were also more than twice the corresponding totals reported in merchandise trade data. Although it is impossible to clarify the reason for these large discrepancies, initial inspection of the firm-level data suggests unrealistically large exports were recorded for several firms in some years.[17]

This initial compilation focuses on 2011-2012, for which firm export totals appear more realistic. Firm totals were also larger than merchandise totals in these years, by 13 and 10 percent, respectively (Table 6). Double counting of merchandise exports passing through more than one firm or inclusion of service receipts in firm exports are two potential causes of discrepancies between the firm-level and merchandise totals. Timing-related discrepancies are also potentially important.[18] The relatively small differentials in 2011-2012 might be related to these factors, but they almost certainly are not the cause of the large discrepancies observed in 2010 and 2013-2014.

The firm export data for 2011 and 2012 also imply some very strange trends and patterns,

[17] For example some large exporters report exports that were 1000s of times larger in only one year than in other years. Although this is not impossible, reporting or input error is a more likely cause in many cases. Much more extensive inspection of firm-level data, including comparisons to trends of related indicators (e.g. sales, employment, fixed assets) is required before more definitive conclusions can be reached.

[18] Because accounting criteria differ for firms and customs officials, they may record the same export in different years.

especially when compared to the merchandise export data, which are based on relatively precise customs' records. First, the growth of firm exports in 2012 was much lower (15 percent) than the growth of merchandise exports (31 percent, Tables 5, 6). Second, if 73 percent of food, beverage, and tobacco exports are assumed to be processed manufactures as published estimates for 2010 indicate, broadly defined shares of manufactures in merchandise exports were 78 percent in 2011 and 81 percent 2012 (Table 5). These shares are similar to shares of manufacturing firms in firm exports (76 percent in 2011, 85 percent in 2012), though firm data indicate a substantially larger increase between 2011 and 2012 (Table 6). The data are also consistent in suggesting that shares of electronic and electronic machinery (16 percent of merchandise exports in 2011, 24 percent in 2012) and of computing, electronic, and electric machinery (18 and 20 percent, respectively) were the largest.[19]

On the other hand, shares of apparel in merchandise exports were much larger (14 and 13 percent, respectively, Table 5) than shares of apparel firms (8 and 7 percent, respectively, Table 6). There were also very large, seemingly implausible fluctuations in several industry shares of firm exports; conspicuous examples include wood products (10 and 1 percent, respectively), motor vehicles (4 and 9 percent, respectively), and furniture (2 and 9 percent, respectively). Firm export values doubled or were halved in 2012 in nine of the 17 manufacturing industries identified in Table 6. Although there are plausible reasons for these fluctuations in some cases, they often appear to result from data reporting or input errors, or inconsistent industry classifications of major exporting firms.[20] These problems need to be examined closely at the firm level before plausible, rigorous analyses can be conducted with

[19] Following revision 3 of the Industrial Standard Industrial Classification (ISIC), the older (1993) version Vietnam Standard Industrial Classification (VSIC93) had four 2-digit categories (VSIC93=30, 31, 32, 33) in this category but the newer, 2007 version (VSIC07, similar to ISIC revision 4) had only two related categories (26 and 27). These two groups do not correspond exactly, but are similar.

[20] For example, reclassification of major exporters (e.g., Samsung affiliates) from electric machinery to computers is a likely cause of fluctuations in these two categories. Similarly, reclassification from wholesale trade to manufacturing also appears important.

the firm export data.

Compilations of firm exports by owner in Table 7 also suggest the MNE share of firm exports, including both WFs and MNE JVs, was substantially larger than the corresponding share of merchandise exports in Table 5 for 2012 (72 vs. 63 percent), but similar in 2011 (56 vs. 57 percent). WFs accounted for the majority of firm exports in both years (59 percent in 2012, and 54 percent in 2011). WF shares were larger in manufacturing, around two-thirds. WF shares were conspicuously large (90 percent or more) in the computer and electronic machinery and electric machinery industries in both years. On the other hand, WF shares were relatively low in food products and similar to shares of overall manufacturing in textiles, apparel, and leather and footwear, for example.

Private firms were the second largest source of firm exports in most years, accounting for about one-fifth of exports in 2011-2012 (Table 7). Private firm shares of manufacturing firm exports were slightly smaller, reflecting relatively large shares in wholesale trade, which increased from 31 percent in 2011 to over one-half in 2012. Private shares were also conspicuously large in food product manufacturing. Private shares of exports in other important manufacturing industries such as textiles, apparel, rubber and plastics were relatively large in some years, but small in others.

Between 2011 and 2012, there were large fluctuations in the shares SOEs and MNE JVs that mirrored each other (Table 7). In 2012, MNE JV shares were larger, 13 vs. 8 percent, but in 2011, SOE shares were much larger 23 vs. 2 percent. Because that most MNE JVs with large sales involve SOEs partners, it seems likely that classification of a few large exporters as SOEs in 2011, but as MNE JVs in 2012, might explain much of this variation. SOE shares were large in wholesale trade (a little over two-fifths) and in mining, especially in 2011 when mining firm exports were small (Table 6). SOE shares were also conspicuously large in wood products in 2011 but small in 2012, and this was a large cause of the fall in total SOE exports

in 2012. In contrast, MNE JV shares of mining were small in 2011 but large in 2012, again suggesting that reclassification or addition of a large oil JV might cause observed fluctuations. On the other hand, MNE JV shares were also relatively large in both years in other transportation machinery and non-metallic mineral products.

Finally, although there are obvious, large, and unrealistic fluctuations and patterns observed in the firm data, distributions of firms by export propensity (Table 8) are consistent with expectations and data from other Southeast Asian economies in suggesting WFs tend to export large proportions (90% or more) of their turnover more often than other ownership groups. For example, these export-specializing firms accounted for about one-third of all WFs and even larger shares of manufacturing WFs (39-40 percent, Table 8). Particularly large shares were observed in apparel (55-57 percent), leather and footwear (59-62 percent), computers and electronic machinery (50-52 percent), and furniture (55-62 percent). Firms with high export propensities also accounted for relatively large shares of MNE JVs (9-12 percent in all industries, 14-23 percent in manufacturing), but much smaller shares of SOEs or private firms (1-2 percent in all industries; 4-6 percent in manufacturing). Nonetheless, here again, if one examines the manufacturing industry-level data, several fluctuations are difficult to explain. They often occur in industries with relatively small samples of SOEs and MNE JVs (fewer than 20 medium-large firms).[21]

5. Three Policy Implications

There are at least three important policy implications emerging from this simple analysis. First, the labor force data reemphasize the important fact that over three-fourths of Vietnam's workers are self-employed or work in households. Most of these workers are unaffected by the emerging corporate sector, which is still in its infancy in many respects. Correspondingly,

[21] In contrast, the smallest industry-level samples were 42 for WFs and 72 for private firms.

policy makers need to understand that performance of Vietnam's corporate sector, including that of SOEs or MNEs, has little direct effect on the vast majority of Vietnam's workers. Indirect effects through linkages are also probably weak, though indirect effects on competition in both output and labor markets are probably more important. There is also good reason to think that the rapidly growing private sector (according to the firm data) will become increasingly important for Vietnamese workers over the next decade or two. This transition will be closely related to the modernization of Vietnam's economy and further reductions in traditional agriculture and services.

Second, the large discrepancies between alternative data sources confound efforts to evaluate Vietnam's progress toward its avowed goal of privatization. In this respect, it is important for the Vietnamese government to clarify the sources of alternative measures of SOE or state sector production and employment. Are there important definitional issues involved that we have failed to understand? Or is the non-SOE state sector really as large as comparisons of state sector estimates from labor force surveys and national accounts and corresponding SOE estimates from the enterprise data imply? Perhaps more importantly, what is responsible for the relatively slow declines in the state sector's share of economy-wide, non-household employment and GDP, compared to the rapid declines of SOE shares of enterprise employment and turnover? Until these questions can be answered more definitively, isn't it very difficult to evaluate the degree of progress toward privatization, much less the economic effects of such efforts?

We agree that further privatization is important for Vietnam and that progress has been relatively slow (World Bank 2011 23-50; 2014 26-27; 2015 23-24). Privatization can be particularly beneficial when it results from expansion of private firms in relatively competitive markets, because it will help improve Vietnam's competitiveness and increase growth. On the other hand, several of Asia's more efficient enterprises have been or are SOEs

and the state sector must play an important role regulating and/or producing in markets affected by externalities (e.g., markets for public goods and services). Thus, although privatization is usually wise, there are exceptions. In this context, the important point is that economists and policy makers often lack sufficient information to evaluate the extent of privatization and its economic effects in Vietnam (and other economies).

Third, it is important for policy makers to recognize that the economic roles of MNEs and SOEs often differ greatly among economic activities. The variation in relative size of MNEs is particularly conspicuous. MNEs, most of which are WFs, make particularly large contributions to international trade, especially exporting. Relatively large investments by MNEs in international marketing networks which reduce transactions costs of exporting are particularly important. MNEs' relatively large contribution to imports is also important because many of these imports are advanced capital goods and sophisticated intermediate inputs that facilitate increased productivity of end users.[22] The large involvement of MNEs in Vietnam's trade also implies that MNEs will be important agents in any attempt to liberalize trade, either unilaterally or as part of some free trade area agreement.

In contrast, MNE contributions to production are more modest and MNE shares of total employment are small, especially if household enterprises and the self-employed are included. Similarly, SOEs make important contributions to production but smaller contributions to employment. This highlights the enclave nature of both SOEs and MNEs in modern Vietnam, and suggests the need to facilitate migration of household and self-employed workers to modern enterprises, the vast majority of which are likely to be private.

[22] Although this paper has emphasized MNE contributions to exports, MNE import shares have also been large and rose rapidly from 18 percent in 1995-1996 to 31-37 percent in 2001-2009, and 53-59 percent in 2012-2015 (General Statistics Office, various years b).

6. Conclusion

This paper has examined patterns and changes of shares of states sector, including SOEs and other state entities, and MNEs in Vietnam's economy since the mid-1990s. Two major conclusions arise, the first being that shares of these ownership groups vary greatly among economic activities. Because most Vietnamese are still self-employed or household workers with little or no connection to the state sector or MNEs, it is important to exclude the household sector from these comparisons. Economy-wide estimates MNE shares of exports have been conspicuously large and risen quickly to over 70 percent in 2015. In contrast, MNE shares of non-household production (GDP) have been modest and shares of non-household employment much smaller. Similarly, the state sector, has accounted for larger shares of economy-wide non-household production than employment.

In other words, economy-wide evidence clearly suggests that MNEs and state sector have had higher average labor productivity than the modern private sector, which is defined to exclude the household sector, and that MNEs have had higher labor productivity than the state sector. In addition, ratios of exports to production have been much higher in MNEs than in the domestic (private and state) sector. Most exports come from WFs and about one-third of WFs export large shares (90%+) of their sales, compared to only about one-tenth of MNE JVs and less than 2 percent of SOEs and private firms.

Although the patterns described above seem clear and important, the second major conclusion is that careful comparisons of economy-wide estimates and estimates from enterprise data reveal important discrepancies that are difficult to explain. For example, SOE shares of firm employment and sales have decreased rapidly since 2000 and SOE export shares have been relatively small in recent years. On the other hand, state shares (including SOEs and other state entities) of non-household employment and GDP declined much more slowly and remained much larger than SOE shares of firm activities. Discrepancies between

alternative estimates of state and SOE shares have become so large they are almost certainly the result of large data errors in one or more sources. There are also important differences in alternative estimates of MNE shares, with enterprise data indicating relatively large employment shares but relatively small production shares. However, discrepancies are relatively small for MNEs.

The most important policy issues surrounding these inconsistencies probably relate to extent of privatization of SOEs in Vietnam and its economic effects, about which we know far less than economists often assert. The large discrepancies between alternative data sources and the numerous problems encountered when using the enterprise data imply that results of rigorous studies using the firm data, including numerous studies cited in this paper, may be particularly sensitive to sampling and data errors, among other problems. Unfortunately, authors are not always forthcoming about such important shortcomings. Finally, no one should forget that Vietnam's formal enterprises remain relatively small and that the majority of Vietnam's workers still have very little or no relation to the activities of SOEs or MNEs.

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Table 1: Shares of Non-Household GDP and Enterprise Turnover (percent, current dong)

	Non-Household GDP			Enterprise turnover, published				SOE JVs, unpublished	
Year	State	MNE	Pri-vate	SOEs	MNE	WFs	Private	Private	MNE
1995	63	10	27	-	-	-	-	-	-
1996	62	11	27	-	-	-	-	-	-
1997	62	14	25	-	-	-	-	-	-
1998	60	15	24	-	-	-	-	-	-
1999	58	18	24	-	-	-	-	-	-
2000	57	20	23	55	20	7	25	-	12
2001	56	20	23	51	20	8	29	-	11
2002	56	20	24	51	19	8	30	-	10
2003	56	21	23	46	20	9	34	-	11
2004	56	22	22	41	22	11	37	-	11
2005	55	22	22	39	22	11	39	5	10
2006	54	24	23	37	22	12	41	6	10
2007	52	25	23	32	21	12	47	6	8
2008	51	25	24	29	18	11	53	7	6
2009	51	25	24	27	18	12	54	6	5
2010	53	27	20	28	18	12	54	6	5
2011	52	28	20	26	20	14	54	6	5
2012	51	28	21	27	22	17	52	5	4
2013	50	30	20	25	25	20	50	4	2
2014	49	31	20	22	26	21	52	4	3
2015	49	31	20	-	-	-	-	-	-

Notes: Non-household GDP shares calculated in current prices, where 2010-2015 is from a 2010 base series excluding products taxes less subsidies on production, 2005-2009 is from a 2010 base series including products taxes less subsidies, and 1995-2004 is from a 1994 base series including products taxes less subsidies; the SOE share of enterprise turnover includes central government SOEs, local government SOEs and joint stock companies with (presumably majority) state capital; unpublished estimates are compiled from data on all firms with positive turnover and employment; SOE-private joint ventures refer to private limited and joint stock companies reporting positive state shares of 50 percent or less; MNE-SOE JVs are explicitly identified in the firm-level data and presumably include all firms with positive MNE and SOE shares.

Sources: General Statistics Office (2010, 2013, 2016, various years b).

Table 2: Total Employment and Enterprise Employment (totals in thousands, ownership shares in percent)

Year	Non-household employment						Enterprise employment, published					SOE JVs, unpublished	
	Total LFS	State LFS	State web	MNEs LFS	MNEs web	Private LFS	Total	SOEs	MNEs	WFs	Private	SOE-Private	MNE-SOE
2000	-	-	-	-	-	-	3,537	59	12	8	29	-	3
2001	-	-	-	-	-	-	3,933	54	12	9	34	-	3
2002	-	-	-	-	-	-	4,658	49	15	12	37	-	3
2003	-	-	-	-	-	-	5,175	44	17	13	40	-	2
2004	-	-	-	-	-	-	5,771	39	18	15	43	-	2
2005	-	-	-	-	-	-	6,237	33	20	16	48	5	2
2006	-	-	-	-	-	-	6,565	29	22	19	49	6	2
2007	9,058	56	55	11	17	33	7,225	24	23	20	52	7	2
2008	-	-	-	-	-	-	7,949	21	23	20	56	6	2
2009	10,283	47	49	14	15	40	8,719	21	22	19	57	6	1
2010	10,645	45	48	16	16	39	9,831	17	22	19	61	5	1
2011	11,188	47	47	15	15	38	10,896	15	23	21	61	5	1
2012	11,544	46	46	15	15	39	11,085	14	25	22	61	4	1
2013	11,610	46	46	15	15	39	11,566	14	26	24	59	4	1
2014	12,311	44	44	17	17	39	12,135	13	28	26	59	3	1
2015	13,343	39	39	17	17	45	-	-	-	-	-	-	-

Notes: For non-household employment LFS series come from Labour Force Survey reports (General Statistics Office various years c) and also exclude self-employment while web estimates come from General Statistics Office (various years b); for published enterprise data, SOE enterprises include central government SOEs, local government SOEs, and joint stock companies with (presumably majority) state capital; unpublished estimates include all firms with positve turnover and employment; SOE-private joint ventures refer to private limited and joint stock companies reporting positive state shares of 50 percent or less; MNE-SOE JVs are explicitly identified in the firm-level data and presumably include all firms with positive MNE and SOE shares. .

Sources: General Statistics Office (2010, 2013, 2016, various years b; various years c).

Table 3 Non-Household GDP per Employee and Enterprise Turnover per Employee (million current dong)

	Non-Household GDP per Worker			Enterprise turnover per worker, published					SOE & MNE JVs, unpublished		
Year	State	MNEs	Private	SOEs	MNEs	WFs	MNE JVs	Private	SOE-Private	MNE-SOE	MNE-Private
2000	39	164	-	213	397	208	843	195	-	932	335
2001	41	190	-	218	362	197	843	196	-	978	230
2002	44	173	-	270	320	178	811	212	-	1,020	154
2003	49	118	-	294	335	188	920	235	-	1,232	190
2004	56	118	-	315	358	213	1,054	257	-	1,443	245
2005	69	125	-	411	384	231	1,203	286	383	1,768	280
2006	79	129	-	526	420	273	1,293	349	380	2,016	264
2007	88	135	-	649	450	304	1,386	438	458	2,227	358
2008	112	166	-	936	543	376	1,730	664	650	2,694	424
2009	125	205	-	927	575	432	1,629	660	736	2,665	542
2010	124	189	57	1,281	658	509	1,777	714	855	3,122	674
2011	154	256	74	1,682	816	663	2,149	853	1,322	4,643	784
2012	178	306	86	1,899	911	772	2,321	877	1,159	4,009	1,103
2013	195	349	94	1,867	1,018	889	2,349	918	1,125	2,656	1,851
2014	207	342	97	1,995	1,038	922	2,328	999	1,232	4,959	1,060
2015	232	344	84	-	-	-	-	-	-	-	-

Notes and Sources: See Tables 1 and 2.

Table 4: MNE exports, MNE shares of Vietnam's merchandise exports, and export-GDP ratios in MNEs and non-MNEs

	Annual estimates					Cumulative Monthly			
	Exports		Export/GDP ratio			Exports		Non-oil exports	
Year	US$bil	% share	MNE	non-MNE	MNE/non-MNE	US$bil	% share	US$bil	% share
1995	1.473	27.03	1.127	0.205	5.508	-	-	-	-
1996	2.155	29.70	1.182	0.223	5.294	-	-	-	-
1997	3.213	34.98	1.319	0.245	5.393	-	-	-	-
1998	3.215	34.35	1.178	0.251	4.692	-	-	-	-
1999	4.682	40.57	1.333	0.272	4.893	-	-	-	-
2000	6.810	47.02	1.646	0.284	5.799	-	-	-	-
2001	6.798	45.23	1.512	0.292	5.178	-	-	-	-
2002	7.872	47.12	1.632	0.292	5.587	-	-	-	-
2003	10.161	50.43	1.776	0.295	6.015	-	-	-	-
2004	14.488	54.70	2.107	0.311	6.772	-	-	-	-
2005	18.554	57.18	2.123	0.284	7.473	18.517	57.45	11.130	44.80
2006	23.061	57.90	2.162	0.301	7.184	22.865	57.73	14.542	46.49
2007	27.775	57.19	2.115	0.323	6.542	27.832	57.52	19.355	48.50
2008	34.523	55.07	1.999	0.344	5.809	34.905	55.49	24.455	46.62
2009	30.372	53.19	1.655	0.305	5.427	29.854	52.76	23.644	46.94
2010	39.152	54.20	2.229	0.336	6.627	38.828	54.21	33.884	50.81
2011	55.124	56.88	2.597	0.366	7.104	55.114	56.87	47.873	53.39
2012	72.252	63.09	2.892	0.323	8.949	72.274	63.08	64.045	60.22
2013	88.150	66.76	2.965	0.310	9.559	88.190	66.74	80.913	64.80
2014	101.180	67.36	3.038	0.321	9.472	101.218	67.40	93.989	65.75
2015	114.267	70.53	3.190	0.294	10.852	114.274	70.52	110.619	69.84

Notes and sources: Annual data from General Statistics Office (various years b); cumulative monthly estimates from General Statistics Office (various years d); MNE shares of crude exports were 100 percent in 2005-2015; exchange rates from International Monetary Fund (2016).

Table 5: Commodity Exports by SITC and VSIC (US$ millions)

Commodity or industry, code	2000	2010	2011	2012	2014
By SITC rev 3, total	14,483	72,237	96,906	114,529	150,217
Manufactures, excluding food, etc., 5-8	6,193	46,666	62,664	78,978	114,057
Textiles, 65	299	3,061	3,770	3,894	5,330
Apparel, 84	1,821	10,390	13,149	14,443	20,174
Leather & Footwear, 61, 85	1,481	5,489	6,987	7,793	11,093
Wood manufactures, 63	93	247	312	390	655
Paper manufactures, 64	59	372	418	503	546
Plastics & Rubber, 57-58, 62	46	1,214	1,456	1,893	1,988
Non-metallic mineral products, 66	172	936	1,247	1,816	2,869
Metals & metal products, 67-69	120	2,738	3,854	4,202	5,634
Electronic & electric machinery 75-77,87-88	1,064	9,309	15,857	27,795	45,101
Non-electric machinery, 71-74	135	1,698	2,352	2,871	3,299
Road vehicles, 78	74	721	969	1,304	1,902
Other transportation machinery, 79	26	531	808	1,082	1,250
Furniture, bedding, etc., 82	232	2,960	3,140	3,640	4,712
Miscellaneous manufactures, 89	281	4,636	4,793	2,930	3,670
Other manufactures	291	2,363	3,550	4,421	5,834
Food, beverages, tobacco, 0-1	3,554	13,729	17,701	19,173	21,966
Mineral fuels, 3	3,825	7,980	11,008	11,353	9,238
Others, 2, 4, 9	912	3,862	5,533	5,024	4,956
ADDENDUM: by VSIC93 (≈ISIC rev 3), total	14,483	72,237	-	-	-
Manufactures, D	8,831	58,384	-	-	-
Food, beverages, tobacco, 15-16	2,391	10,029	-	-	-
Textiles, 17	409	5,249	-	-	-
Apparel, 18	1,696	7,941	-	-	-
Leather & footwear, 19	1,647	6,285	-	-	-
Plastics & rubber, 25	125	1,974	-	-	-
Metals & metal products, 27-28	120	2,846	-	-	-
Electronic & electric machinery, 30-33	1,101	10,014	-	-	-
Furniture, miscellaneous manufacturing, 36	400	6,452	-	-	-
Other manufacturing	943	7,594	-	-	-
Mining & quarrying, C	3,628	6,825	-	-	-

Sources: General Statistics Office (various years a), United Nations COMTRADE (2016).

Table 6: Exports and Exporting Firms with 20 or more Employees

	Values (US$ millions)		Firms (number)	
Variable, industry, VSIC07 code	2011	2012	2011	2012
All industries	109,813	126,159	7,613	7,523
-ratio to merchandise exports	1.13	1.10	-	-
Manufacturing, 10-33	83,417	107,127	6,338	6,494
Food products, 10	8,838	9,165	859	897
Textiles, 13	4,569	4,190	349	372
Apparel, 14	8,626	9,411	983	1,014
Leather & footwear, 15	5,647	8,178	341	368
Wood products, 16	10,490	1,256	335	308
Paper products, 17	449	2,661	178	187
Rubber & plastics, 22	3,111	7,653	559	559
Non-metallic mineral products, 23	983	1,285	241	257
Basic metals, 24	997	1,991	97	115
Metal products, 25	7,913	2,934	459	465
Computers, electronic machinery, 26	10,279	22,185	192	212
Electric machinery, 27	9,604	2,946	184	196
Non-electric machinery, 28	991	974	110	118
Motor vehicles, 29	4,163	11,612	108	125
Other transportation machinery, 30	1,089	1,619	99	104
Furniture, 31	2,390	11,633	562	518
Other manufacturing, 11-12, 18-21, 32-33	3,276	7,434	682	679
Agriculture, 1-3	683	536	71	64
Mining, 5-9	2,247	8,420	65	63
Wholesale trade, 45+46	22,825	8,363	876	631
Other industries	641	1,713	263	271

Sources: Authors' compilation of firm-level data supplied by General Statistics Office

Table 7: Distributions of Exports by Firms with 20 or more Employees among Ownership Groups (% of exports by industry)

	WFs		MNE JVs		SOEs		Private	
Industry; VSIC07 codes in Table 6	2011	2012	2011	2012	2011	2012	2011	2012
All industries	54.27	58.68	2.07	13.37	22.69	7.88	20.97	20.07
Manufacturing	64.72	68.41	2.65	10.54	13.78	1.74	18.85	19.31
Food products	18.81	20.69	2.17	1.91	5.28	6.81	73.74	70.59
Textiles	80.16	73.77	4.04	1.42	3.68	4.26	12.12	20.55
Apparel	52.27	69.79	1.85	2.27	2.96	1.67	42.92	26.27
Leather & footwear	76.33	69.40	3.26	2.45	1.22	0.78	19.19	27.36
Wood products	1.30	17.64	1.47	11.82	92.24	1.58	4.99	68.95
Paper products	76.12	75.69	2.24	0.88	1.26	0.13	20.38	23.29
Rubber & plastics	66.33	48.22	3.69	3.20	2.96	1.23	27.02	47.35
Non-metallic mineral products	38.97	56.63	13.63	11.68	7.16	7.68	40.24	24.01
Basic metals	58.17	76.01	7.42	4.49	0.67	0.38	33.74	19.12
Metal products	94.84	79.11	0.28	4.93	0.42	1.50	4.46	14.46
Computers, electronic machinery	99.40	98.75	0.28	1.08	0.12	0.06	0.20	0.10
Electric machinery	96.62	90.71	2.41	6.26	0.26	0.87	0.71	2.16
Non-electric machinery	90.32	91.71	2.55	0.75	1.33	1.45	5.80	6.08
Motor vehicles	96.96	25.96	2.44	73.74	0.04	0.02	0.56	0.28
Other transportation machinery	38.35	54.34	39.10	38.32	22.36	7.06	0.19	0.27
Furniture	64.17	92.22	2.97	0.79	0.58	0.18	32.28	6.81
Other manufacturing	74.82	73.65	2.98	1.85	10.45	5.05	11.75	19.44
Agriculture	5.70	8.83	0.58	0.77	91.84	88.13	1.88	2.27
Mining	3.78	0.88	1.88	65.98	90.62	31.99	3.72	1.15
Wholesale trade	23.77	5.89	0.02	0.03	45.63	43.02	30.58	51.07
Other industries	9.30	7.08	2.43	0.56	53.12	77.23	35.15	15.14

Sources: Authors' compilation of firm-level data supplied by General Statistics Office; exchange rates for converting turnover from International Monetary Fund (2016)

Table 8: Shares of Firms with 20 or more Employees Exporting 90%+ of Turnover
(% of all firms in each ownerhip-industry group)

	WFs		MNE JVs		SOEs		Private	
Industry; VSIC07 codes in Table 6	2011	2012	2011	2012	2011	2012	2011	2012
All industries	32.98	32.49	9.44	11.69	1.36	1.24	1.78	1.69
Manufacturing	39.89	39.40	19.54	23.08	4.68	3.93	5.52	5.47
Food products	25.76	30.58	12.73	23.64	10.67	7.14	8.68	8.35
Textiles	25.47	29.30	12.50	11.76	0.00	10.71	3.24	4.91
Apparel	55.73	57.44	55.88	55.56	37.93	28.57	14.78	13.73
Leather & footwear	62.45	58.98	77.78	70.00	27.27	28.57	14.48	13.85
Wood products	38.16	37.35	52.63	52.94	5.26	5.88	7.94	7.34
Paper products	24.79	24.58	25.00	50.00	0.00	0.00	1.43	1.93
Rubber & plastics	39.85	34.32	23.08	26.09	4.55	4.55	2.53	2.79
Non-metallic mineral products	26.83	26.80	3.13	12.50	0.00	0.00	1.56	1.68
Basic metals	24.14	27.14	16.67	5.00	0.00	0.00	0.72	1.92
Metal products	31.03	32.17	7.69	20.51	0.00	0.00	1.27	0.57
Computers, electronic machinery	51.66	49.79	0.00	18.18	12.50	20.00	3.09	2.73
Electric machinery	36.88	37.72	0.00	8.33	0.00	0.00	1.01	0.66
Non-electric machinery	40.96	33.00	16.67	0.00	0.00	0.00	0.93	0.98
Motor vehicles	32.06	29.63	6.67	10.00	0.00	0.00	0.00	0.00
Other transportation machinery	14.89	15.46	0.00	7.14	9.38	5.41	0.00	0.00
Furniture	58.74	55.25	60.00	69.23	0.00	0.00	11.83	10.96
Other manufacturing	34.95	34.09	9.84	5.97	0.00	0.00	1.42	2.21
Agriculture	19.23	13.21	12.50	14.29	0.27	0.00	0.05	0.00
Mining	37.50	37.50	6.67	30.77	4.05	5.06	1.26	1.38
Wholesale trade	6.47	4.91	0.00	0.00	1.58	1.53	1.21	0.77
Other industries	2.85	3.97	0.71	1.41	0.07	0.14	0.05	0.06

Sources: Authors' compilation of firm-level data supplied by General Statistics Office; exchange rates for converting turnover from International Monetary Fund (2016)